

## **REMARKS**

Claims 1-41 are pending in the application. Claims 1-24 and 32-39 have been withdrawn from consideration by the examiner. Applicants respectfully restate their position that claims 40 and 41 are linking claims that, if allowed, prevent restriction of claims 32-39 from the present application and claims 32-39 must be rejoined upon allowance of claims 40 and 41 pursuant to MPEP § 809.

Claims 25, 40 and 41 have been amended to recite “changes in length” rather than “changes in width” when referring to physical changes in the portion of the optical fiber in which a sensor is formed. The amendment is not in response to any rejection. Rather, applicants have amended the application solely in order to clarify the claims and avoid any potential confusion. Applicants originally chose the word “width” to correspond to a “width” of the single opening in a mask that formed a respective sensor in the optical fiber. “Width” is an appropriate descriptor when the mask and/or corresponding section of modified refractive index fiber is viewed from an orientation along side and perpendicular to the optical fiber. However, reciting “length” rather than “width” removes any ambiguity resulting from choice of frame of reference. Applicants respectfully submit that the meaning of “width” in the previous version of the claims was clear from the context in which the word was used and thus no change in the scope of claims 25, 40 and 41 results from this amendment.

Claims 40 and 41 stand rejected under 35 U.S.C. § 112, second paragraph, as being “incomplete for omitting essential steps.” Applicants do not believe that there are any “essential steps” missing from claims 40 and 41, and the office action does not set forth sufficient detail to enable applicants to respond to the rejection. The examiner has not identified any particular step as missing from claims 40 and 41, and there are steps both

before and after the “launching” steps of claims 40 and 41. Applicants respectfully request an identification of a particular “essential” step and/or subject matter that is allegedly missing from claims 40 and 41, or withdrawal of the rejection.

Claims 25, 40 and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,400,056 (“Cielo”). This rejection is traversed. Each of claims 25, 40 and 41 includes the step of forming an optical fiber sensor in an optical fiber by “forming a mask over an optical fiber . . . the mask having a single opening.” In contrast to the claimed invention, the mask described in Cielo includes a plurality of openings. This can be seen quite clearly in Figure 1 of Cielo, which illustrates multiple openings 25 illustrated in the mask 16. It is also relevant that Cielo consistently refers to a mask having a plurality of openings (as opposed to a single opening) in the written description. For example, see col. 3, lines 42-43 (“to produce the openings 26 in blade 16”) (emphasis added). The description of the mask (or blade) 16 as having multiple openings is not merely coincidence. As explained later in column 3, the variations 30 in index of refraction of the core of the optical fiber are “quasi-periodical, being spaced apart in correspondence to the openings 26 in the mask 16.” Col. 3, lines 50-54. It is axiomatic that one cannot have quasi-periodic fluctuations without a plurality of corresponding quasi-periodic openings in the mask. As explained in the background section of Cielo, these quasi-periodic variations produce reflections which “add together, in phase, giving rise to a strong reflected beam.” Col. 1, lines 41-42. Thus, Cielo teaches multiple openings in the mask in order to get strong reflections. It follows that one of ordinary skill in the art would not be motivated to produce a mask with only a single opening because the result would be a weak reflector. Accordingly, withdrawal of the rejections of claims 25, 40 and 41 is respectfully requested.

Applicants further note that Cielo is devoid of any teaching of “measuring amplitudes of backward-propagating reflection peaks in the fiber a plurality of times, each of the times

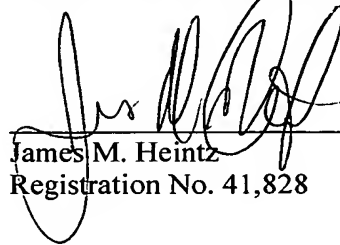
corresponding to a location of” one of the sensors as recited in claims 40 and 41. As discussed above, Cielo’s device involves quasi-periodic openings in a single mask to form a single sensor, and the reflections from these quasi-periodic fluctuations in refractive index add together to form a strong reflection. Cielo never discusses measuring individual reflections from portions of such a single sensor. Moreover, the only discussion of multiple sensors in Cielo occurs in column 6, which discusses a “wavelength multiplexed linearray” at lines 14-15. Wavelength multiplexing signifies that the returns from the multiple sensors in the linearray are measured at different wavelengths, which is not a disclosure or suggestion of measuring the reflections at different times corresponding to the locations of the multiple sensors as recited in claims 40 and 41. Accordingly, claims 40 and 41 define patentable subject matter for this additional reason.

#### **CONCLUSION**

Applicants submit that the application is now in condition for examination on the merits. Early notification of such action is earnestly solicited. Should the Examiner have any suggestions to place the application in even better condition for allowance, Applicants request that the Examiner contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

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